What is claimed is:

1. A method of space charge neutralization of electrons passing through apertures in one direction in electron beam exposure machines, comprising:

bleeding gas into the vicinity of the apertures; and

pumping the gas out from the direction electron travel.

2. A method as in claim 1, wherein the gas is any one of helium, neon, argon, krypton, xenon, hydrogen, nitrogen, oxygen, chlorine, mercury gas, sodium gas, cesium gas, and sulphur hexaflouride (SF_6).

3. A method of performing electron beam exposure, comprising:

forming an electron beam;

passing the electron beam in a direction through a plurality of apertures in a mask and onto a writing surface;

bleeding gas into the vicinity of the apertures; and

pumping the gas out from the direction electron travel.

4. A method as in claim 3, wherein the gas is any one of helium, neon, argon, krypton, xenon,

hydrogen, nitrogen, oxygen, chlorine, mercury gas, sodium gas, cesium gas, and sulphur hexaflouride (SF_6).

5. An electron beam exposure machine, comprising:

an enclosure;

an gas evacuation pump connected to said enclosure;

a source of electrons in said enclosure;

a electron beam-forming focusing lens arrangement in said enclosure and in a path of electrons from said source;

a workpiece holder in a path of electron beams from said lens arrangement;

a mask having apertures at a crossover plane of electrons from the focusing lens arrangement in the path of electron beams toward said workpiece holder, said mask being in said enclosure; and

a gas pump having gas emerging at the apertures in said mask at the entrance of electron beams at said mask.

6. A machine as in claim 5, wherein the gas is any one of helium, neon, argon, krypton, xenon, hydrogen, nitrogen, oxygen, chlorine, mercury gas, sodium gas, cesium gas, and sulphur hexaflouride (SF_6).